

NEPHTYS CRYPTOMMA, NEW SPECIES
(POLYCHAETA: NEPHTYIDAE) FROM THE
NORTHERN GULF OF MEXICO

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Abstract.—A new species of polychaetous annelid, *Nephtys cryptomma*, is described from the northern Gulf of Mexico. The species is most abundant on sandy bottoms and appears to reproduce during the spring.

The species described herein as *Nephtys cryptomma* was first collected in 1978 during a benthic study conducted off Freeport, Texas. Specimens were subsequently collected off Louisiana in 1978-79 during the Central Gulf Platform Study (CGPS) conducted for the Bureau of Land Management, and off Cameron in 1983. The specimens were initially identified as *Nephtys magellanica* Augener (1912:208), based on the description by Hartman (1968:587), especially because of obvious eyespots visible in young specimens. However, more detailed examination of the specimens and comparison with the redescription of the syntypes of *N. magellanica* from the Straits of Magellan by Perkins (1980:34) revealed several differences. The specimens were thus designated *Nephtys* "subdermal eyes" while the description was in progress.

The type and additional specimens of *Nephtys cryptomma* have been deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM). Other specimens were deposited in the Texas A&M University, Department of Oceanography reference collection, College Station (TAMU), and the Texas A&M Marine Laboratory reference collection, Galveston (AMML).

Nephtys cryptomma, new species

Figs. 1-4

Material examined.—TEXAS, Freeport, 19 km offshore, 28°44'N, 95°15'W, sandy

to muddy sand bottoms, 21-m depth, 3 Apr 1980, Holotype (USNM 67778); 4 paratypes (USNM 67779), 2 paratypes (AMML PLY-24); 24 Feb 1978, 1 adult (USNM 67780); 16 Dec 1979, 1 adult (TAMU 1-2289); 13 Feb 1980, 1 young (USNM 67781), 1 young (TAMU 1-2290); 10 Mar 1980, 7 young (AMML PLY-25); 30 Jun 1980, 1 young (USNM 67782); 24 Jul 1980, 3 young (AMML PLY-28); 25 Aug 1980, 3 young (USNM 67783); 17 Apr 1981, 1 adult (AMML PLY-27); Freeport, 9 km offshore, 28°41'N, 95°17'W, muddy bottom, 16-m depth, 28 Jan 1980, 1 young (USNM 67784).

LOUISIANA, Grand Isle, 27 km offshore, 29°02'N, 90°09'W, muddy sand bottom, 13-m depth; 27 May 1978, 1 young (AMML PLY-29); Grand Isle, 54 km SSW offshore, 28°39'N, 90°14'W, sandy to silty sand bottom, 36-m depth; 26 Aug 1978, 4 young (USNM 69962), 1 adult (TAMU 1-2291), 1 young (AMML PLY-26).

VIRGINIA, York River, 3 to 10-m depth, Jan-Mar 1961, 4 adults (USNM 33327); Nov 1960, 1 adult (USNM 33326), 3-6 m; Mar 1961, 1 adult, 6 young (USNM 33328).

FLORIDA, Seahorse Key, 6 Feb 1960, 3 adults (USNM 33330).

Diagnosis.—Prostomium squarish anteriorly, tapering posteriorly, with paired anterolateral and ventrolateral antennae; mid-dorsal pigment spot. First or tentacular segment extended lateral to prostomium with weakly developed setigerous parapodia bearing small dorsal tentacular cirri and

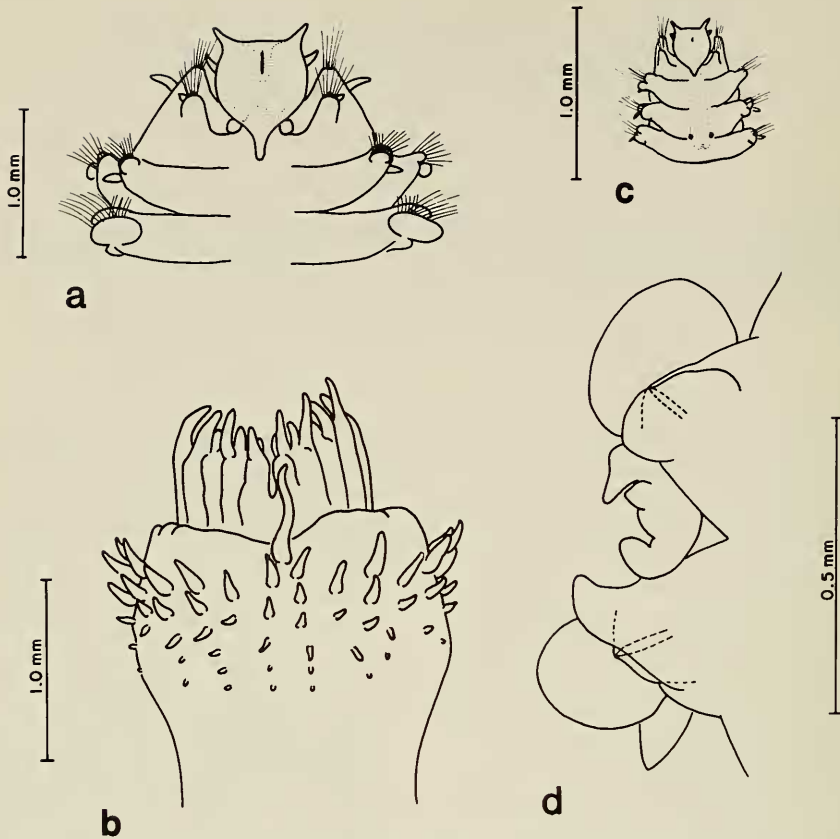


Fig. 1. *Nephtys cryptomma* (holotype): a, Anterior end, dorsal view; b, Distal end of everted proboscis, dorsal view; c, Anterior end of juvenile showing location of eyespots and brain (dotted); d, right parapodium 3, anterior view (setae not shown).

larger ventral tentacular cirri. Proboscis barrel-shaped, with 22 subterminal longitudinal rows of papillae in addition to long tapering middorsal and shorter midventral papillae. Parapodia biramous, with acicular lobes conical; notopodial presetal lamellae shorter than acicular lobes, with shallow excavations; postsetal lamellae broadly oval, longer than acicular lobes. Branchiae sickle-shaped, beginning on setiger 3, terminating about 3 segments from pygidium. Dorsal cirri begin on setiger 2, small in anterior segments, becoming elongate, thin, strap-like, almost as long as branchiae by mid-body, continuing to posterior end. Preacicular setae barred capillaries, postacicular setae longer flowing capillaries with mostly

fine teeth. Pygidium with dorsal anus and single anal cirrus.

Description.—Prostomium squarish anteriorly, tapering posteriorly, with pair of antennae at anterior corners, pair of ventrolateral antennae just anterior to neuropodia of peristomium, pair of nuchal organs at posterolateral angles, and medial spot or streak of reddish-brown pigment (Fig. 1a). Peristomial or tentacular segment with biramous parapodia directed anteriorly; notopodia with presetal lamellae smaller than acicular lobes, postsetal lamellae slightly larger, dorsal tentacular cirri small, notosetae directed anterodorsally; neuropodia with weakly developed lamellae and larger tentacular cirri, neurosetae directed ante-

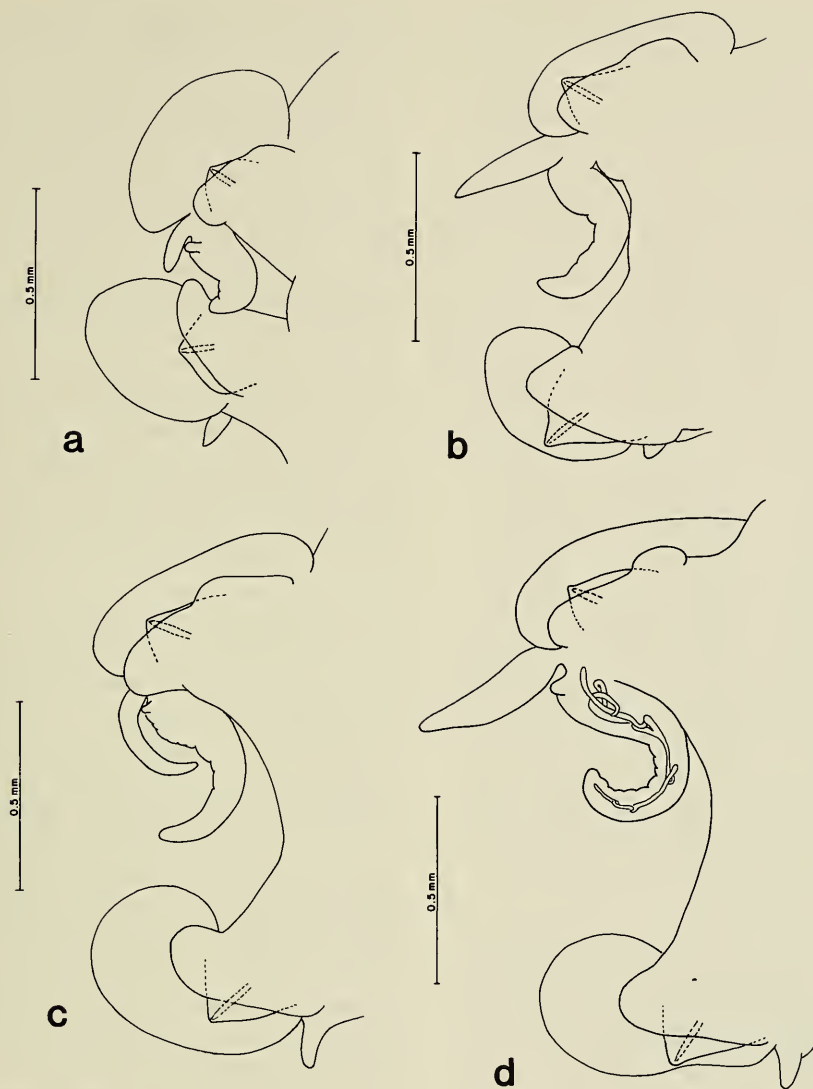


Fig. 2. *Nephtys cryptomma*: a, Right parapodium 10, anterior view; b, Right parapodium 38, anterior view; c, Right parapodium 50, anterior view; d, Right parapodium 70, anterior view.

riorly (Fig. 1a). Mouth flanked by lateral lobes. Subterminal part of everted proboscis with long, tapering, middorsal papilla, shorter midventral median papilla and 22 longitudinal rows of conical papillae, usually 4–6 per row, decreasing in size proximally; on both dorsal and ventral surfaces, second row of papillae on either side of midline with only 2 (sometimes 1) papillae; oc-

asionally some ventral rows merge in V-shape; terminal part of proboscis with 11 pairs of bifid papillae (Fig. 1b). Internal deep lateral grooves begin at proximal end and terminate about one-quarter of length before distal end; single brown tooth in terminus of each groove. Pair of black eyespots on posterolateral surface of brain, visible through integument of juvenile and young

specimens (Fig. 1c), but obscured by more opaque integument in adults. Notopodia of setiger 2 with small pre- and postsetal lamellae and small dorsal cirri. Parapodia fully developed from setiger 3 (Fig. 1d), reaching maximum size about setiger 10 (Fig. 2a). Acicular lobes conical or, on few anterior segments, slightly bilobed. Notopodial presetal lamellae shorter than acicular lobes, with shallow excavations in anterior segments, becoming more pronounced toward mid-body; postsetal lamellae longer than acicular lobes, broadly oval, without excavations (Figs. 2a–d). Neuropodial presetal lamellae shorter than acicular lobes, oval; postsetal lamellae much larger than acicular lobes, oval. From mid-body posteriorly, lamellae gradually reduced in size, and quite small in far posterior segments. Interramal branchiae present from setiger 3 (Fig. 1d), well-developed in mature specimens, large, recurved on all segments, with small conical projections just below insertion of dorsal cirri (Figs. 1d, 2a–d). Dorsal cirri attached to dorsal part of notopodia, small anteriorly, attaining maximum size in anterior third of body and continuing posteriorly; when fully developed in mid-body and posterior segments, thin, lanceolate (Figs. 2a–d). Ventral cirri present from peristomial segment. Setae all capillaries of 2 basic types forming 2 fan-shaped rows in both rami. Preacicular setae shorter, straighter, appearing cross-barred internally (Fig. 3a). Postacicular setae longer, flowing, spinous; most neurosetae finely spinous along entire blade, but 2 to 3 in middle of row with few large basal teeth in addition to fine spines (Fig. 3b); some upper neurosetae appearing smooth (Fig. 3c). Notosetae directed dorsolaterally, neurosetae directed ventrolaterally. Pygidium rounded, enclosed in posterior small segments, with dorsal anus and single terminal anal cirrus (Fig. 3d).

Etymology.—The specific epithet is from the Greek “kryptos” (hidden) and “omma” (eye) referring to the deep-set eyespots which

are evident in juveniles, but hidden beneath integument in adults.

Size range.—The holotype is a complete ovigerous female, 43 mm long, 3 mm wide (including parapodia), having 82 fully formed segments, followed by 3 incomplete ones, the last represented by setae only. The largest specimen, complete but broken, is 65 mm long, 4 mm wide, with 98 segments, including 2 incomplete ones (USNM 67780).

Color.—Living worms are cream-colored, except for the nearly transparent posterior few segments and anal cirrus, reddish-brown prostomial spot and black eyes. Setae and tips of acicula dark golden. Blood red. Gut visible as dark area from about setiger 16 to end of body. Preserved worms are uniformly opaque white to pale yellow, except for the prostomial spot.

Distribution.—The species is presently known from the northern and eastern Gulf of Mexico (Florida, Louisiana, and Texas) and Virginia.

Remarks.—The dark prostomial spot could cause *N. cryptomma* to be mistaken for other species. *Nephtys simoni* Perkins (1980:37) has the spot and eyespots, but the paratypes (USNM 55684) have slightly bilobed acicular lobes rather than conical lobes, rounded notopodial presetal lamellae with the lamellae smaller than in *N. cryptomma*, and slightly bilobed postsetal lobes. *Nephtys parva* Clark and Jones (1955:143) has the pigment spot and eyes, and entire acicular lobes, but has reduced pre- and postsetal lamellae and branchiae beginning on setiger 4. *Nephtys magellanica*, the species with which *Nephtys cryptomma* was originally confused, lacks the prostomial pigment spot, has bilobed acicular lobes, shorter presetal lobes, and only 20 rows of papillae on the proboscis.

Several lots of specimens collected from the Chesapeake Bay area by Wass (1965:16; USNM 33326–28, 38738) and Seahorse Key, Florida, by Taylor (1971:103–104; USNM 33330) were examined. These spec-

imens, originally identified as *N. magellanica* were re-examined by Perkins (1980), determined to be similar to *N. hombergii* Savigny (1818:314) and labelled *N. cf. hombergii*. Perkins (1980:41–42) stated that these specimens differed from *N. simoni* in lacking dorsal cirri on segment 1, yet they all bear small papilla-like dorsal cirri on the tentacular segment, arising from the lateral surface of the parapodia. In some cases the cirri are very small and inconspicuous, causing the parapodium to appear bilobed. Furthermore, the dorsal presetal lamellae have shallow excavations as in *N. cryptomma* rather than the deeply cleft lamellae as in *N. hombergii* (Fauvel 1923:367–368, fig. 143c, d; Fauchald 1963:12, fig. 3E). These specimens have therefore been referred to *N. cryptomma*.

Nephtys cryptomma is probably more abundant in the eastern Gulf of Mexico than the single record indicates. Re-examination of the specimens identified as *N. simoni* collected during the MAFLA study for the Bureau of Land Management (Taylor 1984:9) may show that some of the individuals are actually *N. cryptomma*.

Ecological notes.—*Nephtys cryptomma* has been collected most frequently on sandy and muddy sand bottoms. Depths ranged from 16 m off the Texas coast to 36 m off Louisiana. The species was never a numerically dominant member of its assemblage. During a 6-year (1978–1983) benthic study off Freeport, Texas, in which 15 stations were sampled at each of two sites, the maximum monthly abundance was 12 individuals at the deeper sandy bottom site. Data from both the Freeport and CGPS studies indicate that *N. cryptomma* is a spring breeder. The few ovigerous females obtained were collected in the spring. Off Freeport, only a few specimens were collected in 1978 and 1982. In 1979–1981, maximum abundances occurred in early spring, followed by decreases through summer, while in 1983 the largest numbers were col-

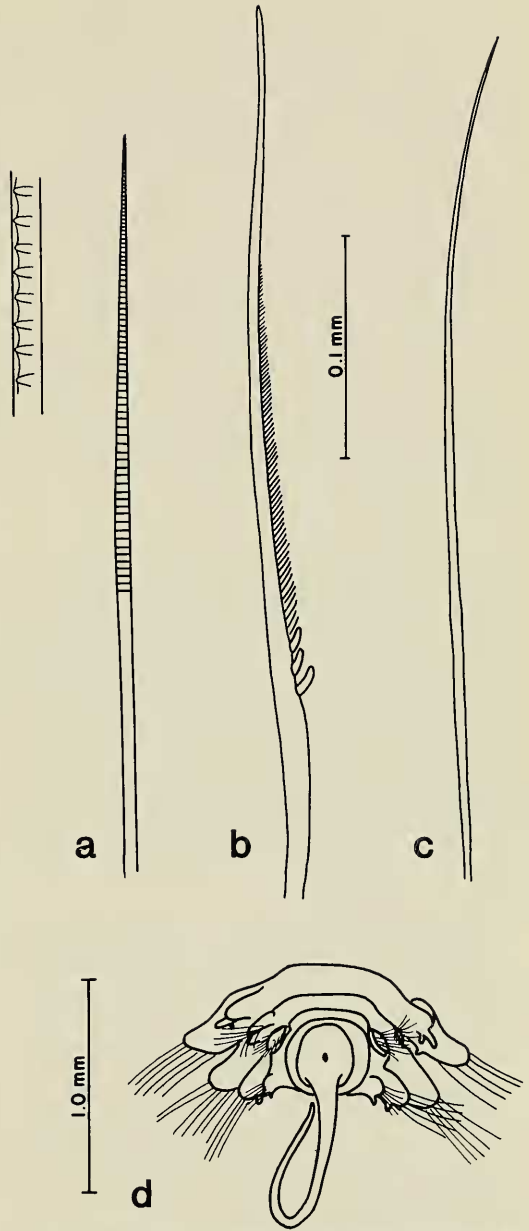


Fig. 3. *Nephtys cryptomma*: a, Barred preacicular capillary seta; inset showing details of cross-barring, highly magnified; b, Spinous postacicular neuroseta from middle of row; c, Smooth postacicular neuroseta from lower part of row; d, Posterior end and pygidium.



Fig. 4. Seasonal distribution of *Nephrys cryptomma* off Freeport, Texas, 1978-1983 on sandy bottom study area in 21-m depth.

lected in late spring (Fig. 4). The rapid decline in June 1979 coincided with the occurrence of hypoxic, hydrogen sulfide-laden water (Harper et al. 1981) and was probably not indicative of the usual seasonal trend. During the 3-season, 36-station CGPS study off Louisiana in 1978-79, *N. cryptomma* abundances were: May-June—84; August-September—9; January—8, which agrees with the seasonal data collected off Freeport.

Notes on living worms.—Living worms were collected on 3 April 1980 from the type-locality off Freeport, Texas, and observed in the laboratory in a finger bowl. The worms were generally passive, lying on their backs. When prodded they swam vigorously by undulating the posterior three-quarters of the body. The proboscis was never everted unless the worm was immersed in 70% ethanol.

Cilia on the branchiae and interramal body walls created water currents that flowed posteriorly in the interramal channel. The branchiae were kept away from the body wall in this current, and were frequently snapped backward, either singly or in unison, which dislodged small adhering particles.

The mid-dorsal longitudinal blood vessel

was mostly obscured by musculature. It emerged from the musculature in the vicinity of setiger 25, and disappeared again at the base of the prostomium. Between setiger 25 and 15 the vessel was large, contractile and fixed in position. From setiger 15 to 9 the position of the vessel was not fixed, and it moved from side to side as the worm flexed. From setiger 9 to the base of the prostomium the vessel was fixed in the dorsal midline. Paired contractile longitudinal ventral vessels, lying alongside the ventral nerve cord, were visible from about setiger 4 to the pygidium; they were largest anteriorly. Blood flowed posteriorly in the right vessel and anteriorly in the left. Lateral vessels were small, forming networks of vessels in the body wall posterior to the parapodia, and in the branchiae (Fig. 2d). The gut was visible as a dark line from about setiger 16 to the posterior end of the body.

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